

## ABSTRACT

5       The present invention provides an apparatus, system and method of peak-to-average reduction of an oversampled signal for a digital communication system. Peak detection 504 and width measurement 504 are advantageously combined in which a peak portion or multiple peak portions of an input signal that exceeds a predetermined threshold is detected and a width of the peak portion is  
10 determined. The peak detection and width measurement are further combined with a novel variable width shape generation methodology 506 in which a variable width shaping response is applied 510 to the peak portion responsive to the peak portion width. Additionally, a novel receiver technique 1390 can be included to reduce or eliminate the upstream BER impact using downstream  
15 oversampled shaping.